CLAIMS

1. A fiber optic cable assembly, which comprises:

(1) a fiber optic cable comprising at least one optical fiber, a primary buffer member circumferentially surrounding each optical fiber, and a secondary buffer member circumferentially surrounding the primary buffer member, wherein the secondary buffer member is prepared from, or has an outer surface or layer prepared from, a material selected from the group of bondable polyimides and bondable fluoropolymers;

(2) a connector adapted to receive the fiber optic cable; and

(3) an adhesive which serves to bond the bondable polyimide or fluoropolymer of the secondary buffer member to the connector to form a unitary structure,

wherein, when tested in accordance with Method Number 2009-1 of SAE-AS-13441 (January 1998), the fiber optic cable assembly exhibits a bond strength of at least about 2 Newtons per centimeter in the adhesive coated area(s) thereof.

2. The fiber optic cable assembly of claim 1, wherein, when tested in accordance with Method Number 2009-1 of SAE-AS-13441 (January 1998), the fiber optic cable assembly exhibits a bond strength ranging from about 2 to about 9 Newtons per centimeter in the adhesive coated area(s) thereof.

3. The fiber optic cable assembly of claim 1, wherein the primary buffer member of the fiber optic cable is prepared from a material selected from the group of silicones, acrylic polymers, acrylates and polyimides.

4. The fiber optic cable assembly of claim 3, wherein the primary buffer member is prepared from a material selected from the group of acrylate functional monomers, acrylate functional oligomers, and mixtures thereof.

5. The fiber optic cable assembly of claim 3, wherein the primary buffer member is prepared from a polyimide material.

6. The fiber optic cable assembly of claim 1, wherein the secondary buffer member of the fiber optic cable is made up of a single layer that is prepared from a bondable fluoropolymer comprising a maleic anhydride grafted ethylene-tetrafluoroethylene copolymer.

7. The fiber optic cable assembly of claim 1, wherein the secondary buffer member of the fiber optic cable is made up of two layers, wherein a first or inner layer is prepared from one or more fluoropolymers that can be melt-processed at temperatures of less than about 200 °C, and wherein a second or outer layer is prepared from a material selected from the group of bondable polyimides and bondable fluoropolymers.

8. The fiber optic cable assembly of claim 7, wherein the first or inner layer is prepared from a thermoplastic fluoroelastomer.

9. The fiber optic cable assembly of claim 8, wherein the thermoplastic fluoroelastomer is a terpolymer of tetrafluoroethylene, hexafluoropropylene and vinylidene fluoride.

10. The fiber optic cable assembly of claim 7, wherein the second or outer layer is prepared from a bondable polyimide.

11. The fiber optic cable assembly of claim 10, wherein the second or outer layer is prepared using a polyimide film having a sealable component coated on one surface thereof.

12. The fiber optic cable assembly of claim 7, wherein the second or outer layer is prepared from a bondable fluoropolymer.

13. The fiber optic cable assembly of claim 12, wherein the bondable fluoropolymer is a maleic anhydride grafted ethylene-tetrafluoroethylene copolymer.

14. The fiber optic cable assembly of claim 1, wherein the adhesive is a thermosetting epoxy adhesive having a glass transition temperature of greater than about 85 °C.

15. A low smoke, low toxicity fiber optic cable that comprises:

(1) at least one optical fiber;

(2) a primary buffer member circumferentially surrounding each optical fiber;

(3) a secondary buffer member circumferentially surrounding the primary buffer member, wherein the secondary buffer member is prepared from, or has an outer surface or layer prepared from, a material selected from the group of bondable polyimides and bondable fluoropolymers;

(4) a strength member circumferentially surrounding the secondary buffer member; and

(5) an outer protective jacket circumferentially surrounding the strength member,

wherein, when tested in accordance with Boeing Specification Support Standard BSS 7324 (December 2, 1998) Smoke Emission Test Method, the cable produces, at four minutes in the flaming mode, a smoke with a specific optical density of less than 100.

16. The fiber optic cable of claim 15, wherein when tested in accordance with Boeing Specification Support Standard BSS 7324 (December 2, 1998) Smoke Emission Test Method, the cable produces, at four minutes in the flaming mode, a smoke with a specific optical density of less than about 80.

17. The fiber optic cable of claim 16, wherein when tested in accordance with Boeing Specification Support Standard BSS 7324 (December 2, 1998) Smoke Emission Test Method, the cable produces, at four minutes in the flaming mode, a smoke with a specific optical density of less than about 50.

18. The fiber optic cable of claim 15, wherein the primary buffer member is prepared from a material selected from the group of silicones, acrylic polymers, acrylates and polyimides.

19. The fiber optic cable of claim 18, wherein the primary buffer member is prepared from a material selected from the group of acrylate functional monomers, acrylate functional oligomers, and mixtures thereof.

20. The fiber optic cable of claim 18, wherein the primary buffer member is prepared from a polyimide material.

21. The fiber optic cable of claim 15, wherein the secondary buffer member is made up of a single layer that is prepared from a bondable fluoropolymer comprising a maleic anhydride grafted ethylene-tetrafluoroethylene copolymer.

22. The fiber optic cable of claim 15, wherein the secondary buffer member is made up of two layers, wherein a first or inner layer is prepared from one or more fluoropolymers that can be melt-processed at temperatures of less than about 200 °C, and wherein a second or outer layer is prepared from a material selected from the group of bondable polyimides and bondable fluoropolymers.

23. The fiber optic cable of claim 22, wherein the first or inner layer is prepared from a thermoplastic fluoroelastomer.

24. The fiber optic cable of claim 23, wherein the thermoplastic fluoroelastomer is a terpolymer of tetrafluoroethylene, hexafluoropropylene and vinylidene fluoride.

25. The fiber optic cable of claim 22, wherein the second or outer layer is prepared from a bondable polyimide.

26. The fiber optic cable of claim 25, wherein the second or outer layer is prepared using a polyimide film having a sealable component coated on one surface thereof.

27. The fiber optic cable of claim 22, wherein the second or outer layer is prepared from a bondable fluoropolymer.

28. The fiber optic cable of claim 27, wherein the bondable fluoropolymer is a maleic anhydride grafted ethylene-tetrafluoroethylene copolymer.

29. The fiber optic cable of claim 15, wherein the strength member comprises aramid yarns or fibers that axially extend and circumferentially surround the secondary buffer member.

30. The fiber optic cable of claim 29, wherein the aramid yarns or fibers are yarns or fibers that have been fully pre-baked to remove chemicals added to the yarns or fibers during manufacture.

31. The fiber optic cable of claim 30, wherein the aramid yarns or fibers are pre-baked at temperatures of at least about 260 °C to remove the chemicals added during manufacture.

32. The fiber optic cable of claim 15, wherein the outer protective jacket is prepared using a fluoropolymer material selected from the group of fluorinated ethylene-propylene, smoke-suppressed tetrafluoroethylene-hexafluoropropylene-vinylidene fluoride, and smoke-suppressed copolymers of chlorotrifluoroethylene and vinylidene fluoride.

33. The fiber optic cable of claim 15, wherein the primary buffered optical fiber(s) is a graded-index, multi-mode optical fiber(s) having a core diameter of approximately 62.5 micrometers and a cladding diameter of approximately 125 micrometers, and wherein the fiber optic cable demonstrates an optical attenuation (EIA/TIA Test Procedure Number 455-3A) of less than about 3.5 decibels per kilometer at 850 nanometers and less than about 1.5 decibels per kilometer at 1300 nanometers.

34. The fiber optic cable of claim 33, wherein the fiber optic cable demonstrates an optical attenuation (EIA/TIA Test Procedure Number 455-3A) of less than about 3.0 decibels per kilometer at 850 nanometers and less than about 1.0 decibel per kilometer at 1300 nanometers.

35. The fiber optic cable of claim 15, wherein the optical fiber(s) is a single-mode optical fiber(s) having a core diameter of approximately 9 micrometers and a cladding diameter of approximately 125 micrometers, and wherein the fiber optic cable demonstrates an optical attenuation (EIA/TIA Test Procedure Number 455-3A) of less than about 3.0 decibels per kilometer at 850 nanometers and less than about 1.0 decibel per kilometer at 1300 nanometers.

36. The fiber optic cable of claim 35, wherein the fiber optic cable demonstrates an optical attenuation (EIA/TIA Test Procedure Number 455-3A) of less than about 2.8 decibels per kilometer at 850 nanometers and less than about 0.8 decibels per kilometer at 1300 nanometers.